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in Newfoundland

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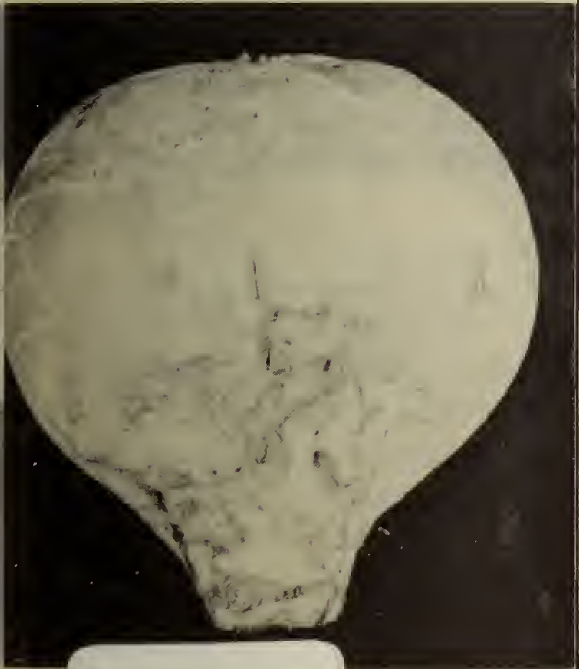

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CONTROL OF THE CABBAGE MAGGOT IN NEWFOUNDLAND

by

Ray F. Morris

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The cabbage maggot[1] is the most serious pest of cabbage, rutabagas (swede turnips), summer turnips, cauliflower, and radish in Newfoundland. Occasionally broccoli and Brussels sprouts are attacked.

In many sections of the Province this insect pest has become the limiting factor in the production of such important crops as cabbage and swede turnips.

DESCRIPTION AND LIFE HISTORY

There are four stages in the development of the cabbage maggot: the egg, the maggot or larva, the pupa, and the adult fly.

The first flies appear during the last week of May or the first week of June, depending upon the weather, and more appear until the latter part of August. They emerge from the soil where turnips and cabbage were grown the previous year. The flies are similar in general appearance to the house fly but slightly smaller. They are dark ashy-gray in color with many black bristles over the body (Fig. 1).

After mating, the female flies deposit their small, white, finely ridged eggs (Fig. 2) in the soil close to the stem of the plant. Sometimes the eggs are attached to the stem or lower leaves. Egg laying commences during early June, generally when the wild pear[2] is in full bloom, and continues to the end of August.

Three to seven days after the eggs are laid they hatch into small, white, legless maggots, which move to the roots and tunnel into them. The maggots, or larvae (Fig. 3), feed for 3 to 4 weeks. When maggots are abundant the roots of cabbage, cauliflower, and broccoli become honeycombed and rotten. This causes the plants to wilt and die. In turnips and radish the maggots tunnel into the fleshy roots, making them unmarketable.

When the maggots have completed their growth they generally leave the roots, crawl a short distance into the soil, and form puparia (Fig. 4). In the puparia the maggots transform to pupae and later to flies, the changes taking 2 to 3 weeks. Some of the flies emerge from the puparia in July and August and repeat the cycle. However, most of the pupae overwinter in the soil and develop into flies the following spring.

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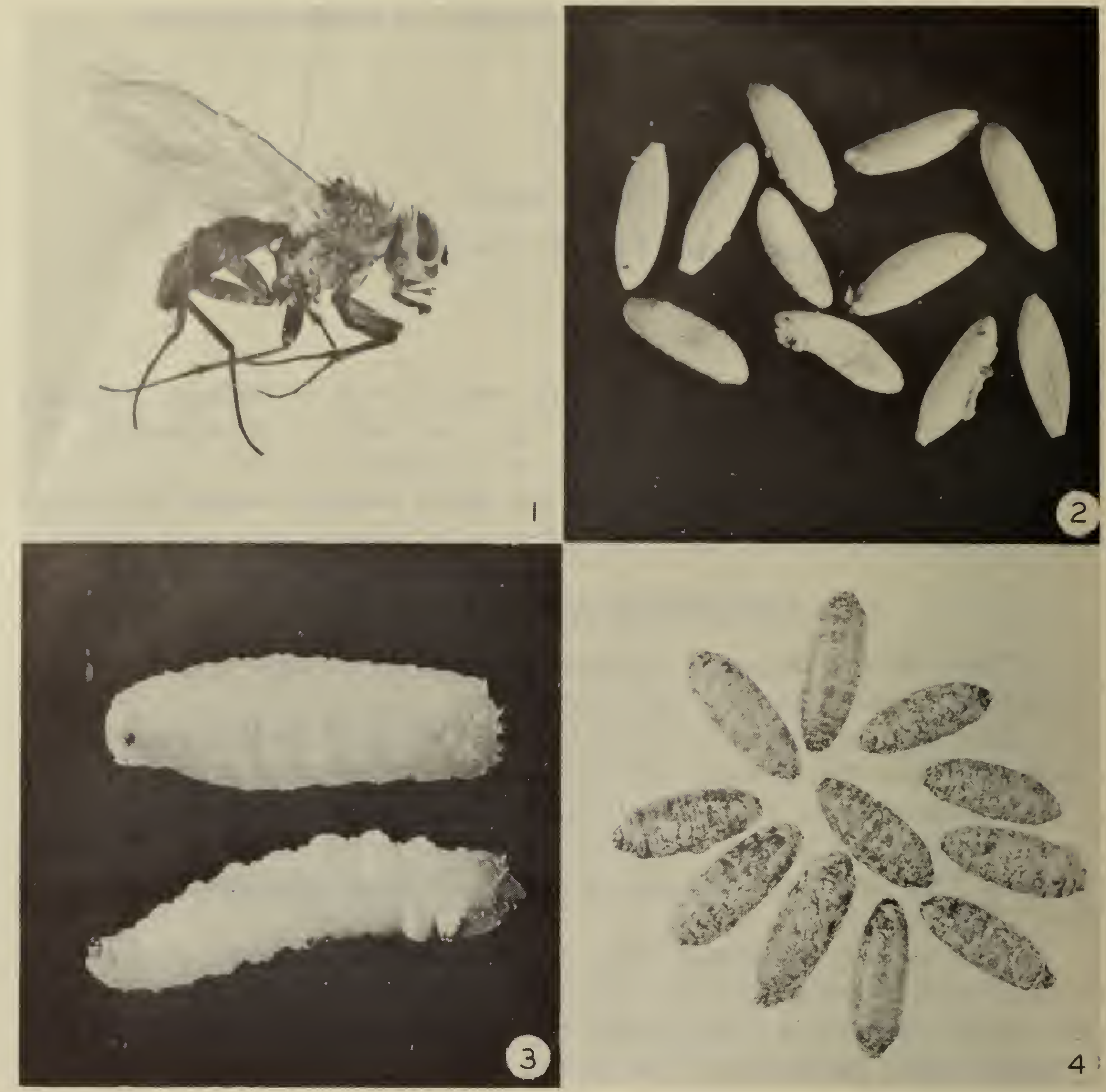
[1] *Hylemya brassicae* Bouché.

[2] *Amelanchier* sp.



Figures 1 – 4. The cabbage maggot. 1, Adult fly. Seven times natural size. 2, Eggs. Eighteen times natural size. 3, Fully grown maggots. Nine times natural size. 4, Puparia. Four times natural size.

As flies emerge and lay eggs throughout the growing season, all four stages of development may be found in the field at the one time.

CONTROL

Aldrin and heptachlor are the most effective insecticides for controlling the cabbage maggot. However, it is important that the insecticide be placed where the young maggots will come in contact with it upon hatching and before entering the plant roots.

Cabbage, cauliflower, broccoli, and Brussels sprouts must be protected immediately after transplanting but can survive a light infestation after they are well established. Radish and swede and summer turnips must be protected during the entire growing season or as long as they are in the ground.

Transplants of Cabbage, Cauliflower, Broccoli, and Brussels Sprouts

1. At transplanting time, apply 5 per cent granular aldrin at 60 pounds per acre, or 2.5 per cent granular heptachlor at 120 pounds. Apply the insecticide along the row in a 4-inch band and set the plants directly into the treated area. This mixes the insecticide with the soil adequately. Granular insecticides can be quickly and conveniently applied in a band along the row with a commercial fertilizer distributor (Fig. 5).

In small gardens the insecticide can be easily applied from a bottle with a perforated lid. Apply it along the row or concentrate it around the stem of the plant. Half a pound of 5 per cent granular aldrin, or 1 pound of 2.5 per cent granular heptachlor, is sufficient for 100 feet of row.

OR

2. Within 5 days after transplanting, drench the soil around the plant stem with a dilute mixture of 25 per cent emulsible aldrin or heptachlor (containing 2 pounds of active ingredient per gallon). Add 1 pint of the concentrate to 40 imperial gallons of water (half an ounce to 1 gallon) and pour 5 ounces of the mixture around each plant.

Cabbage Seed Sown in the Field

At seeding time apply 5 per cent granular aldrin at 60 lbs. per acre, or 2.5 per cent granular heptachlor at 120 lbs. per acre. Apply the insecticide along the row in a 4-inch band and sow the seed down the middle of the band.

Swede Turnips (Rutabagas) and Summer Turnips

1. At seeding time apply 5 per cent granular aldrin at 80 lbs. per acre, or 2.5 per cent granular heptachlor at 160 pounds. Apply the insecticide along the row in a 4-inch band and sow the seed down the middle of the band. As the seeder mixes the insecticide with the upper layer of soil, raking is not necessary. Granular insecticides can be conveniently applied along the row with a commercial fertilizer distributor. The chute of the machine should be modified to distribute a 4-inch band of insecticide (Fig. 5).

In small gardens, granular insecticides can be easily applied along the row from a bottle with a perforated lid. Half a pound of 5 per cent granular aldrin, or 1 pound of 2.5 per cent granular heptachlor, is sufficient for 100 feet of row.

OR

2. Insecticide — fertilizer mixtures containing aldrin or heptachlor (5 pounds of active ingredient per ton of fertilizer) give adequate protection if properly applied. Apply 1500 to 2000 pounds per acre (for rows 28 inches apart)

on the surface in a 6-inch band and then rake the material into the soil to a depth of 2 inches. Insecticide – fertilizer mixtures are ineffective against the maggots when placed more than 2 inches below the soil surface.

Never broadcast the insecticide or the insecticide – fertilizer mixture, as this would reduce the concentration of the insecticide and give inadequate control. One proper application protects the crop throughout the growing season.

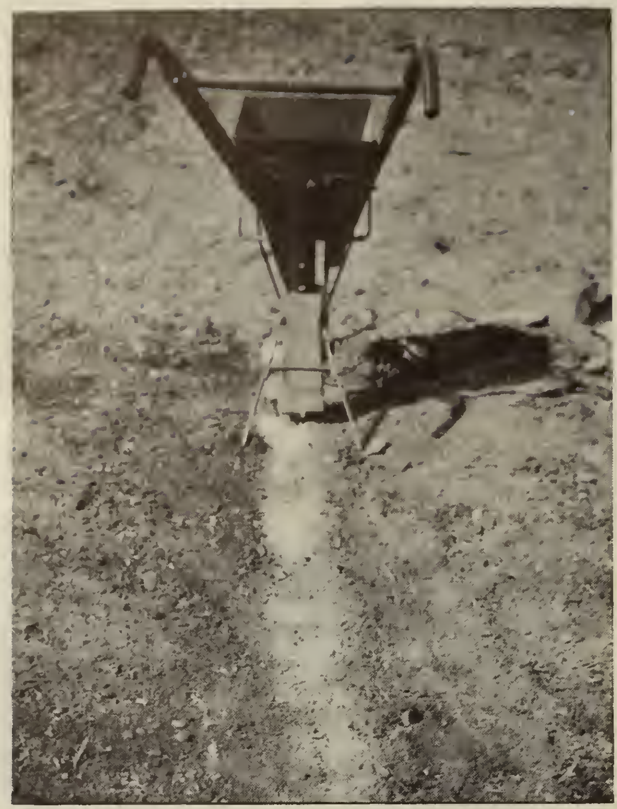


Fig.5. A fertilizer distributor with the chute modified so as to place insecticide along the row in a 4-inch band. The chute supplied with this machine, although somewhat adjustable, provided too narrow a band and gave an uneven distribution. The modified chute is constructed of galvanized iron and has a discharge opening 4 inches by 1 inch. Two baffle plates within the chute provide an even distribution of insecticide.

Radish

Radish must be protected throughout the growing season. For best results apply 5 per cent granular aldrin, or 2.5 per cent granular heptachlor, directly to the seed furrow at the time of seeding. Half a pound of 5 per cent aldrin, or 1 pound of 2.5 per cent heptachlor, is sufficient for 200 feet of row.

Natural Control

In Newfoundland the cabbage maggot is attacked by several important parasitic insects. In some years, up to 60 per cent of the puparia have been parasitized, but in general these parasites do not reduce an infestation adequately.

Address further inquiries to: Experimental Farm, St. John's West, Newfoundland, or your local agricultural fieldman.

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